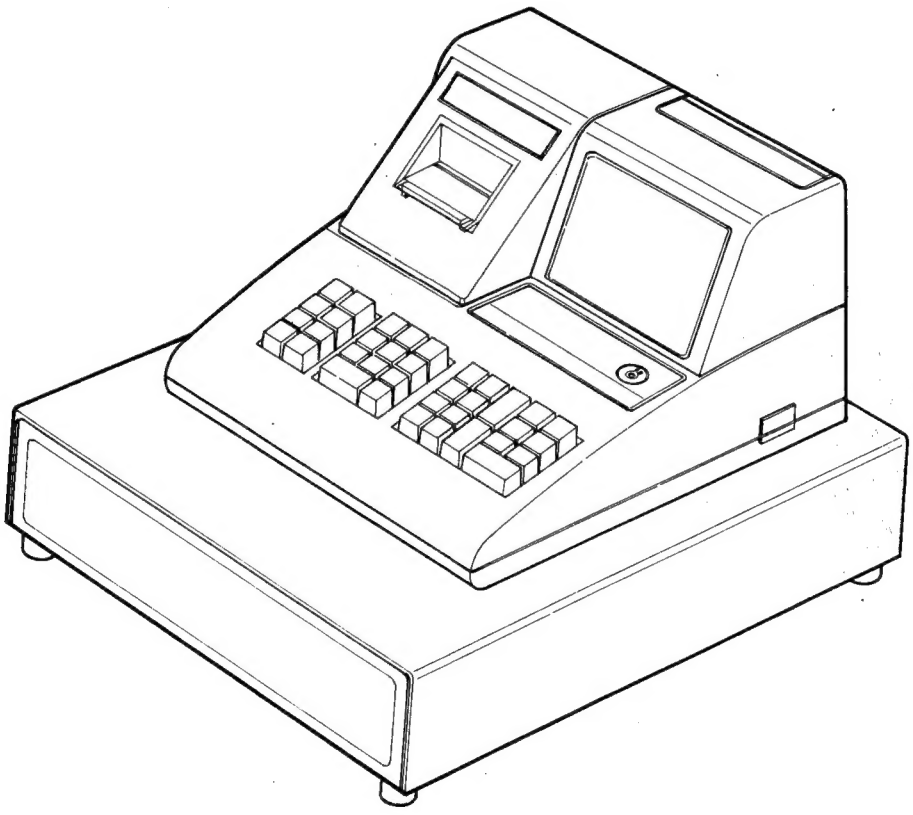
SAMSUNG

SERVICE MANUAL

ER-220/ER-240

ELECTRONIC CASH REGISTER



SPECIFICATION

ITEM	SPECIFICATION	ITEM	SPECIFICATION
POWER	AC 120, 220, 240/50Hz, 60Hz	DRAWER	4B/8C,5B/5C,3B/4C,4B/4C
RATING	16 WATT	MODE	VOID, OFF, REG, X, Z, PGM
PRINTER	CP121CRS		
DISPLAY	FRONT(9), REAR(9)		

Design and specifications are subject to change without notice.

WARNING

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual , may cause interferance to radio communications.

It has been tested and found to comply with the limits for a Class A computing device, pursuant to subpart J of part 15 of FCC Rules, which a redesigned to provide reasonable protection against such interferance when operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interferance, in which case the user at his own expense will be required to take whatever measures may be required to correct the interferance.

SYSTEM OVERVIEW

This ELECTRONIC CASH REGISTER is the microprocessor based system,using an 8 - bit single chip microcomputer.

This service manual provides technical information for many individual component systems, and circuit, and gives an analysis of the operations performed by the circuits. The Keyboard, power supply,display and printer circuit,and the other circuitry are covered.

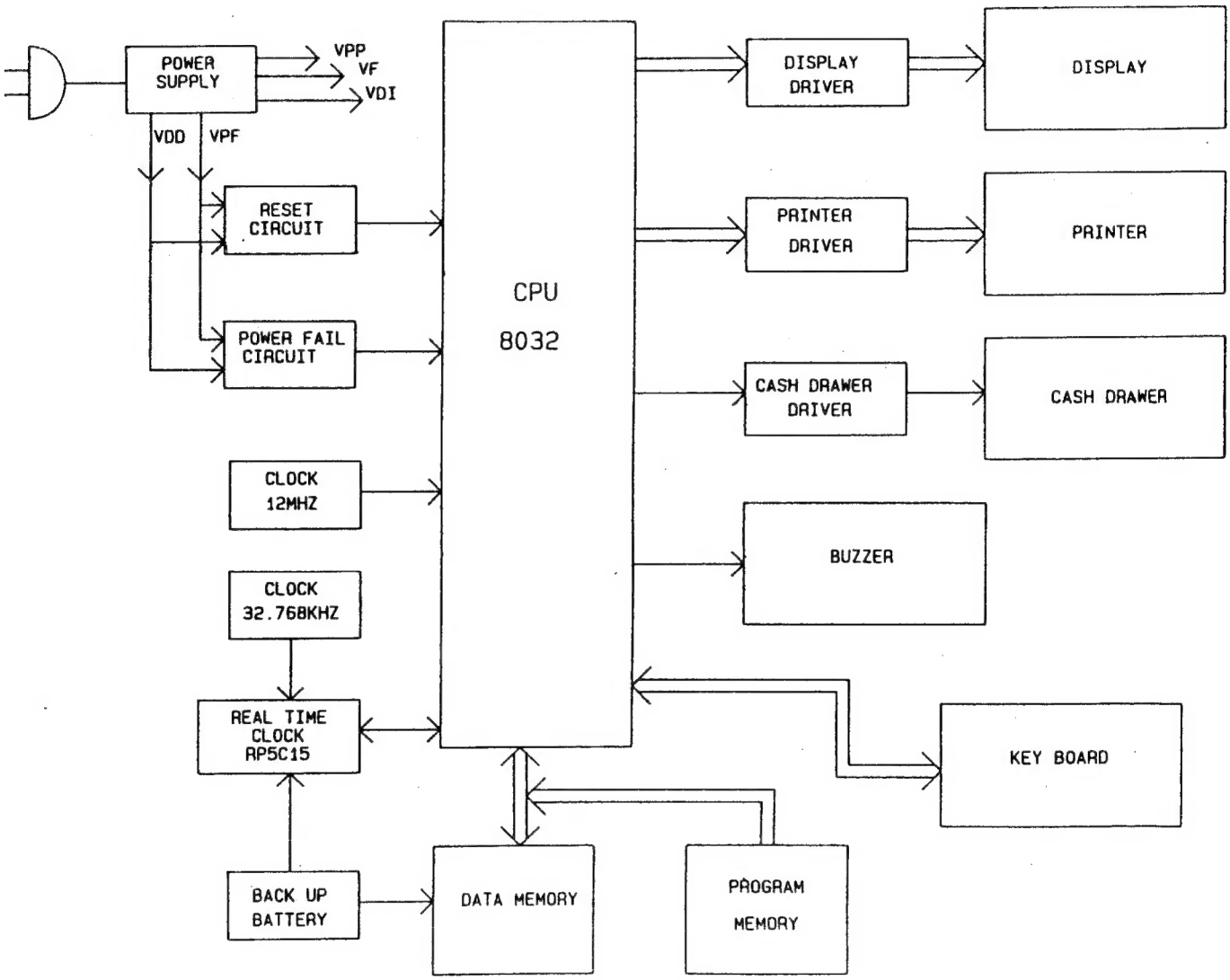
Also included is technical information on the CITIZEN single station printer used in this machine. If you need more technical service, please call our service branch.

Schemetics and specifications provide needed information for the accurate trouble-shooting.

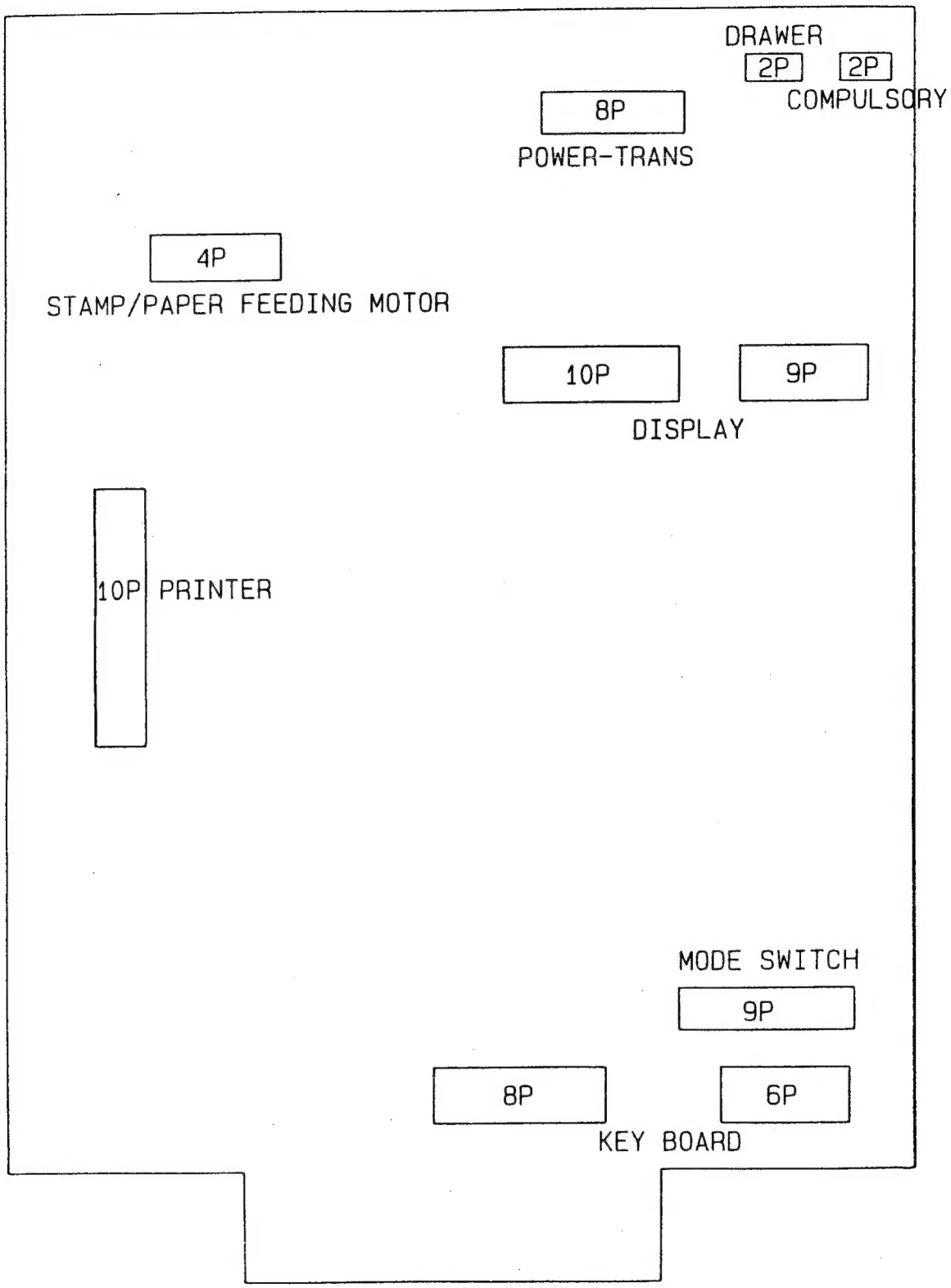
All information in this manual is subject to change without prior notice. Therefore you must check the correspondence of your manual with your machine.

TABLE OF CONTENTS

1 . SYSTEM BLOCK DIAGRAM



2 . DISASSEMBLY MAIN-PWB



3 . SYSTEM INSTALLATION

3-1 BATTERY ON/OFF SWITCH

Look at the MAIN PWB, you can find a small JUMPERED SWITCH at the BATTERY side. The purpose of this switch is to minimize the consumption of battery power when this machine is not used for a long time.

For the normal operation,this switch must be placed at the ON position.

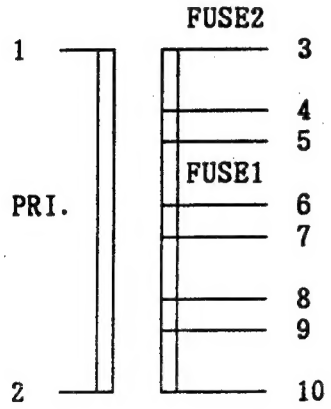
WARNING : If you turn OFF this switch while using the set, it changes the time and values that are preseted.

3-2 SYSTEM RESET PROCEDURE

When install the machine, SYSTEM RESET must be performed before operation.Plug in, while depress [-%], [VD], [#/NS] keys in 3 seconds at PGM mode. Then, this system will be reset and all data will be cleared. (REFER TO USERS MANUAL)

WARNING :You should not do this procedure after installation. If you do so, all counter and total sums be lost.

TRANSFORMER SPECIFICATION



VER.	PRIMARY	SECONDARY	(COLOR)
U.S.A	120V 60Hz	(3-4) AC18V 1.4A	RED
EUROPE	220V 50Hz	(5-6) AC9.5V 0.7A	BLUE
U.K.	240V 50Hz	(7-8) AC22V 0.1A	ORANGE
		(9-10) AC4V 0.15A	WHITE

FUSE SPECIFICATION (SECONDARY)

LOC.NO	EUROPE	CODE NO.	U.S.A	CODE NO.
FUSE1	250V F1A	949 115003FHNA	125V NM1A	949 115101NLNA
FUSE2	250V T2A	949 115009THNA	125V SB2A	949 115101SLNA

4 . C I R C U I T R Y

4-1 POWER CIRCUIT

This machine has two different power sources, the one is a power circuit and the other is a BATTERY.

The power circuit generates five different DC voltage sources, +5V for the logic, +17V for the printer driving, +4V and -24V for the display and +11.2V for the power fail detection circuit.

The BATTERY applies +3.6V to the back-up circuit.

A. VPP(+17V)

The VPP voltage is used for the source voltage of the printer drive circuit. The AC 18V is rectified by the BRIDGE DIODE RECTIFIER BD1 and it is regulared by the capacitor 50V 2200uF.

The switching circuit composes circuit of 2 Transistors KSC945 and KSD288,a zener diode 18V, to maintain the output voltage at DC 17V.

B. VPF(+11.2V)

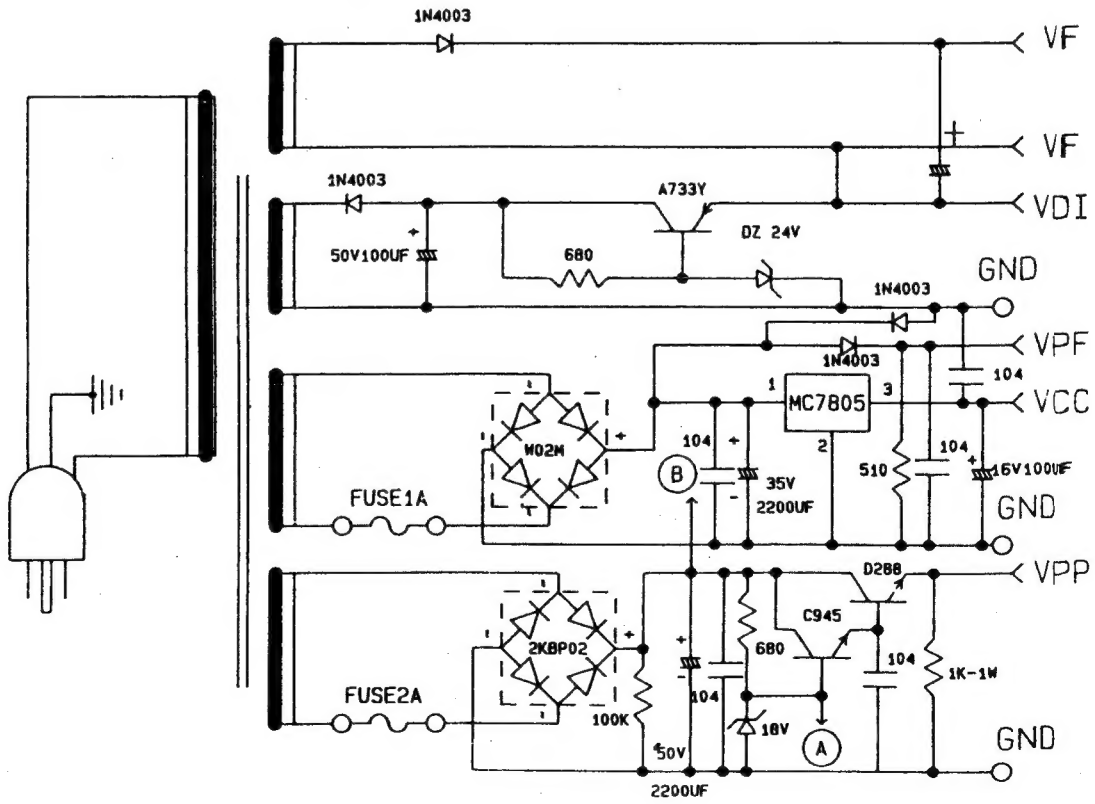
The VPF voltage is used for the input voltage of the power fail detection and reset circuit.

The AC9.5V is rectified by the BRIDGE DIODE RECTIFIER BD2 and regulated by the capacitor 35V 10uF. Then the output is +11.2V.

C. VCC(+5V)

The VCC is used for the power source of the system logic.

The most part of this voltage, rectified by the BD2 and passed through the diode 1N4003 , is regulated by the capacitor 35V 2200uF, and it input the 3 - terminal regulating IC MC7805. Then output voltage is applied to directly to the logic and other +5V terminal.



D. VF(+4V)

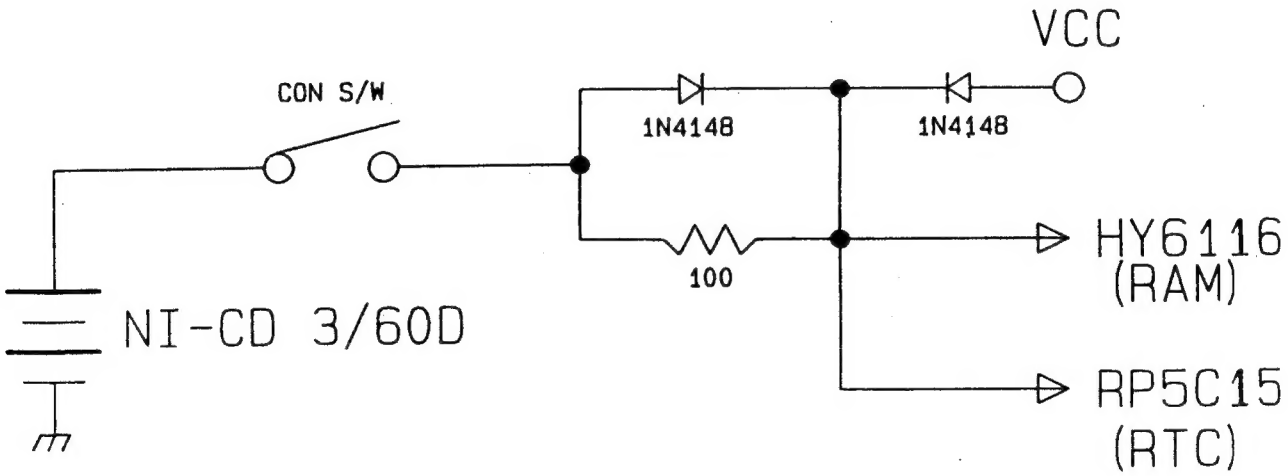
The VF voltage is used for providing the power to the filament of the DIGITRON. The AC 4V is rectified by the diode rectifier 1N4003 and regulated by the capacitor 16V 470uF. The 4V output voltage heats the filament of the DIGITRON.

E. VDI(-24V)

The VDI voltage is used for providing to the GRID and PLATE of DIGITRON. The AC 22V is rectified by the diode rectifier 1N4003 and then regulated by the capacitor 50V 100uF. The switching circuit composes of a zener diode 24V and a transistor KSA733, it maintains the output voltage at DC -24V.

4-2 BATTERY CIRCUIT

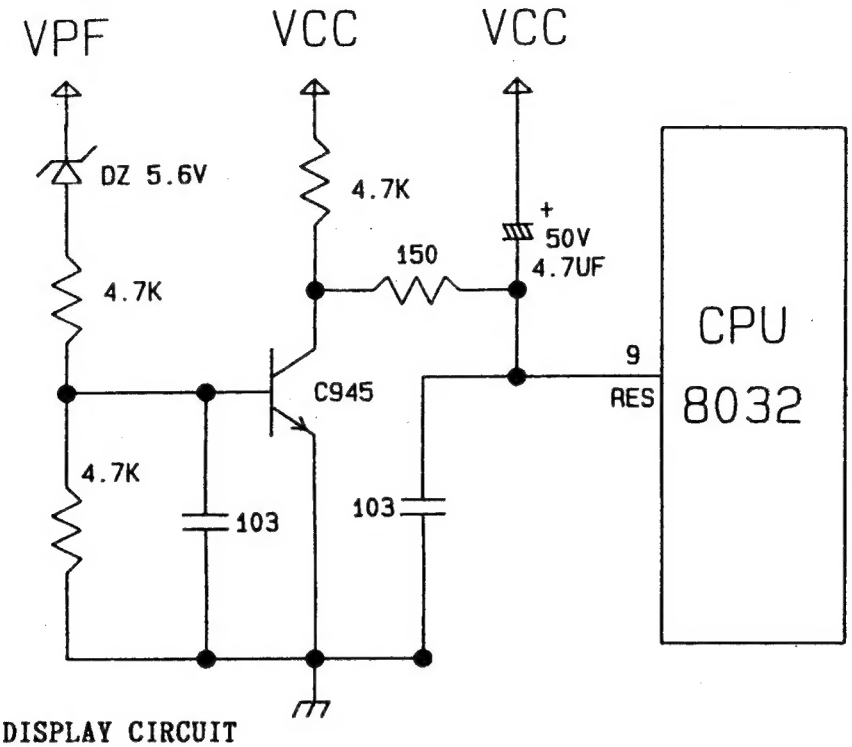
In the normal operation, VCC voltage goes to the BATTERY through D2, R for the charge. At the power off, BATTERY voltage goes to the RAM (HY6116) and RTC(RP5C15). This operation is able to keep saving the DATA for a long time without the external power source.



4-3 RESET AND POWER FAIL DETECTION CIRCUIT

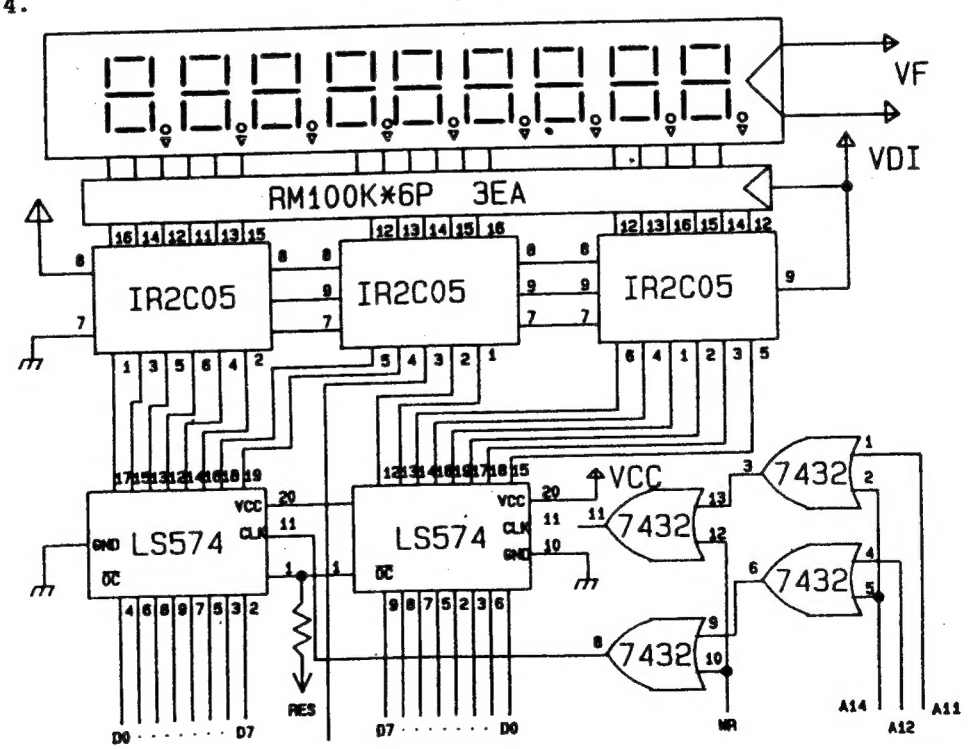
The reset circuit prevents the CPU from starting to operate before the system is fully powered-up and initialized.

The power fail detection circuit is to save the state of the CPU and it's meaningful data before the logic voltage of CPU goes down below the normal operation voltage on the condition such as main power off.



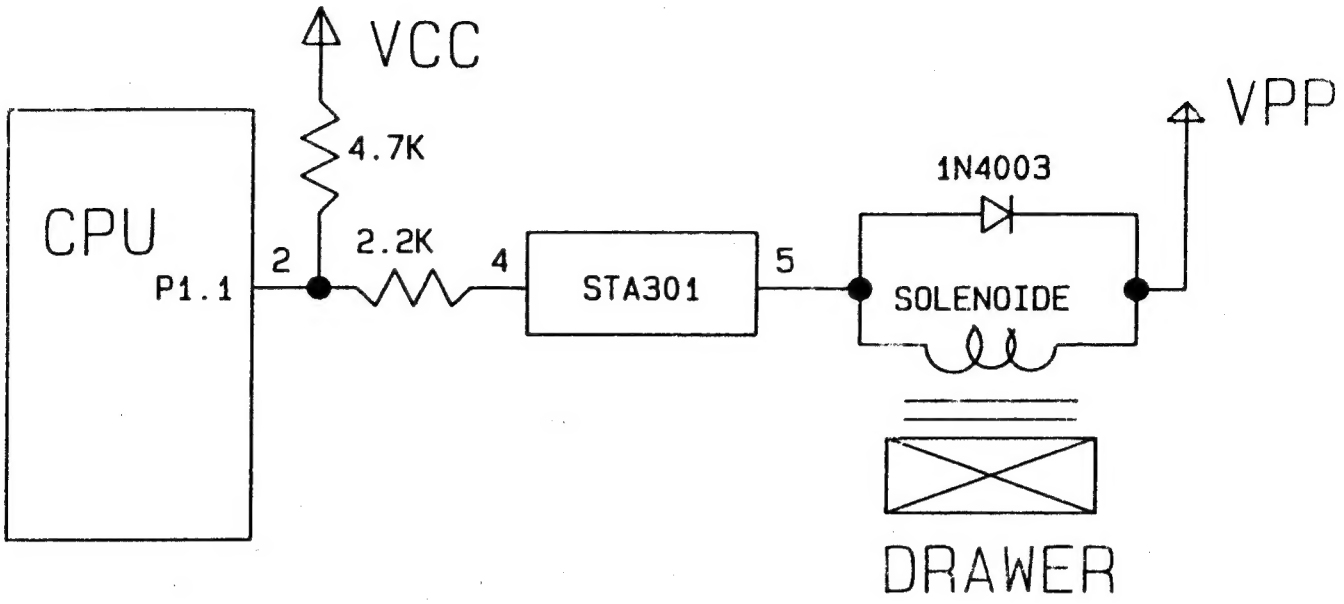
4-4 DISPLAY CIRCUIT

This circuit is composes display and turret(customer) for display to input Data by the KEYBOARD. Digit and segment sinal outputed D0 - D7 by CPU, it's output the Digitron by the amplituding IC IR2C05 through LATCH 74HCTLS574.



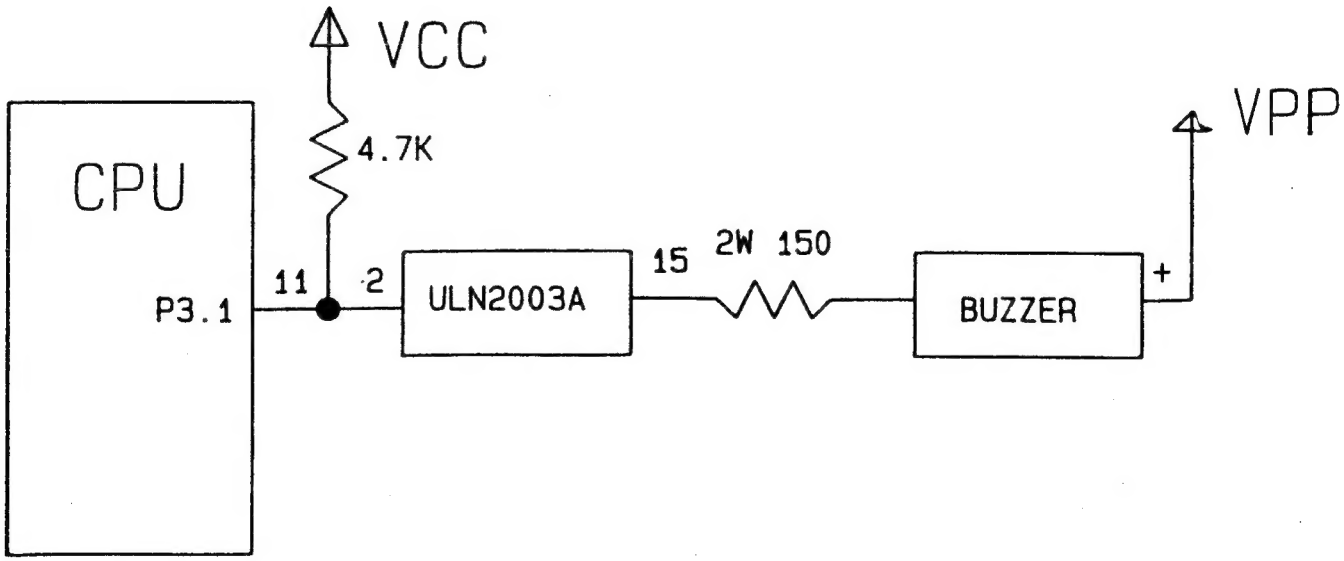
4-5 DRAWER CIRCUIT

The Drawer circuit is activated by using the signal P1.1 from the CPU. This signal is normally LOW, and goes HIGH to cause STA301 to turn ON and activate the drawer solenoid, then the Drawer is opened.



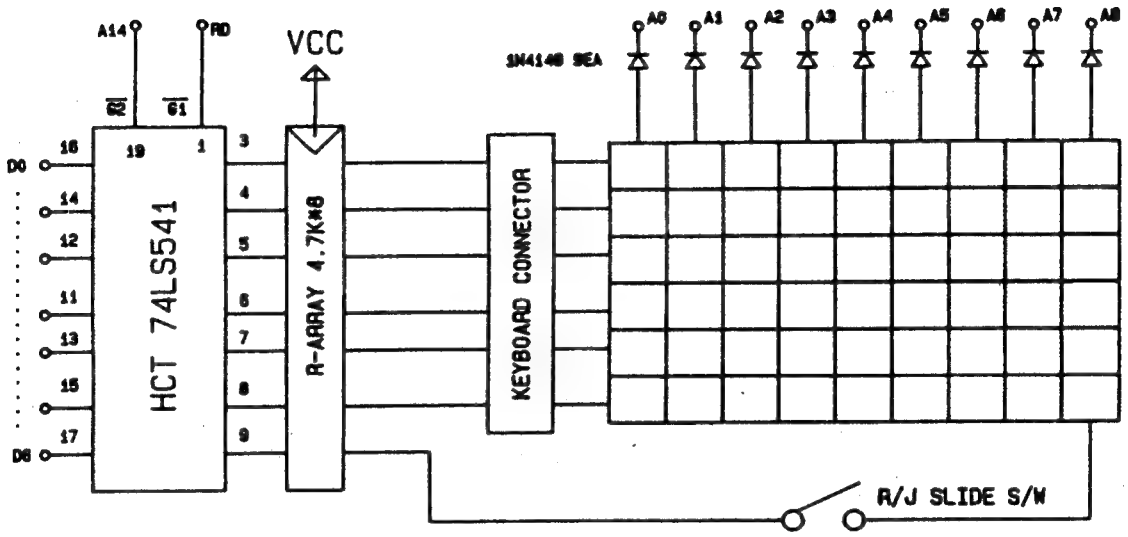
4-6 BUZZER CIRCUIT

The Buzzer is activated by the NORMAL INPUT of the key and ERROR state. This signal is normally LOW, and goes HIGH to turn on the ULN2003A and activates the BUZZER . In the case of the normal input of the key, it activates during about 50msec, in the case of ERROR state, it activates until stop operation such as CLEAR key input.



4-7 KEYBOARD CIRCUIT

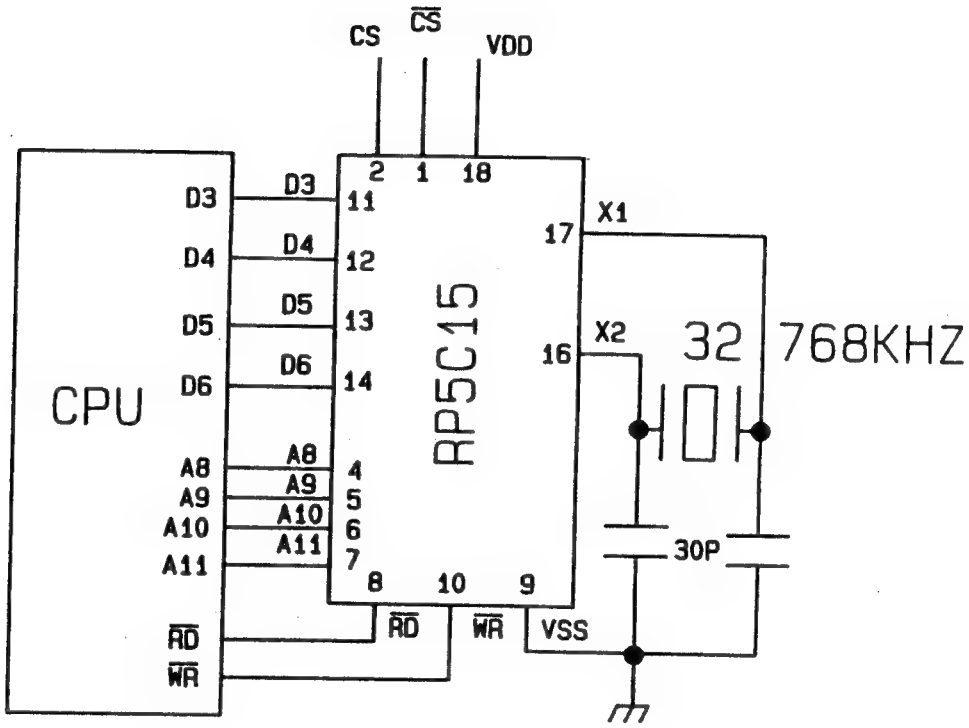
Key scan is completed by applying the scan signal on the address line and the return signal on the data line of CPU through key switch and 74HCTLS541.



4-8 REAL TIME CLOCK CIRCUIT

The clock circuit composes of a timer IC RP5C15, a crystal 32.768KHz and two capacitor.

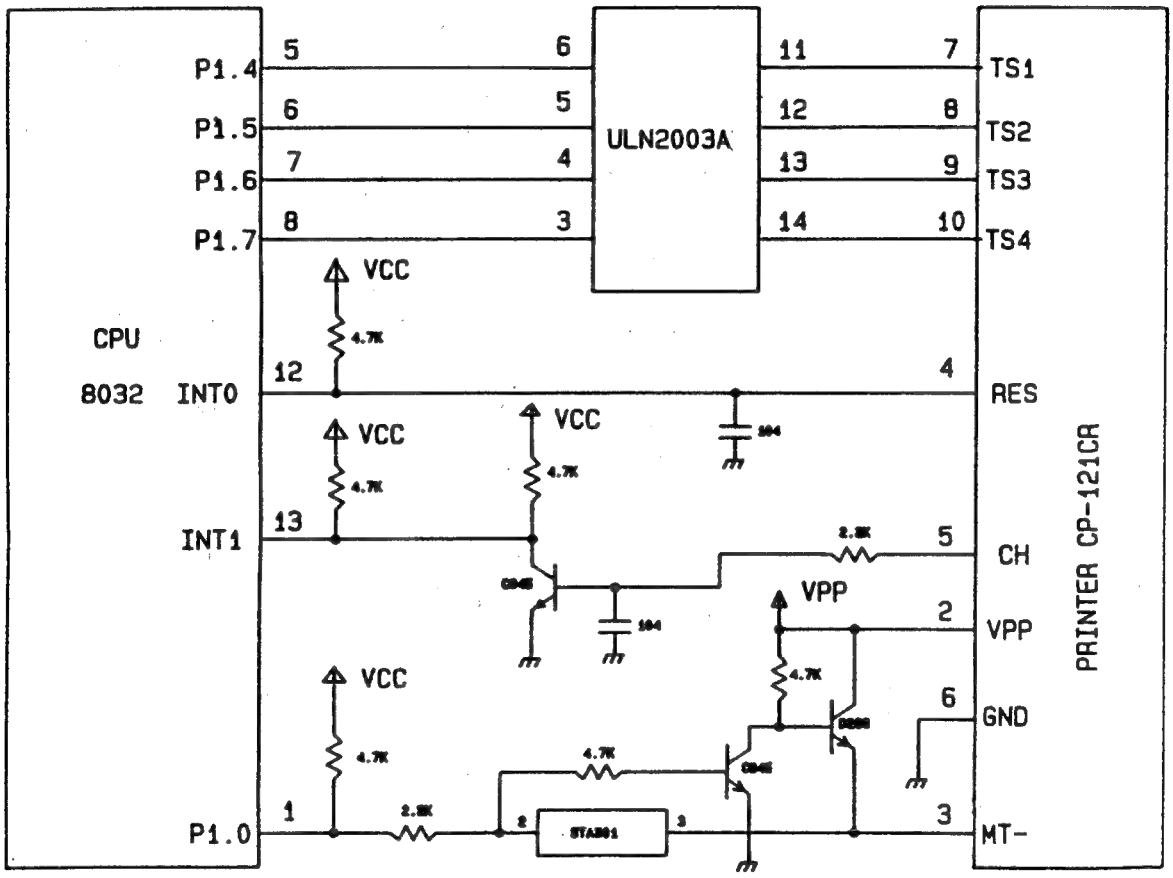
CPU directly accesses RP5C15 by the DATA bus therefore any desirable Time counters can be written to or read from the clock in the same way as writing to or reading from RAM as well as calendar, time counters and alarm function allowing battery back-up



4-9 PRINTER CIRCUIT

At the first, CPU drives DC motor through STA301, the timing signal CP and RP is generated from the ptinter to CPU for appling information of the any character position.The TR converts the analog timing signal to the digital signal.

When the signal of desirable position is detected, CPU activates the appropriate Hammer Solenoid through the ULN2003A, then meaningful information will be printed on the paper.

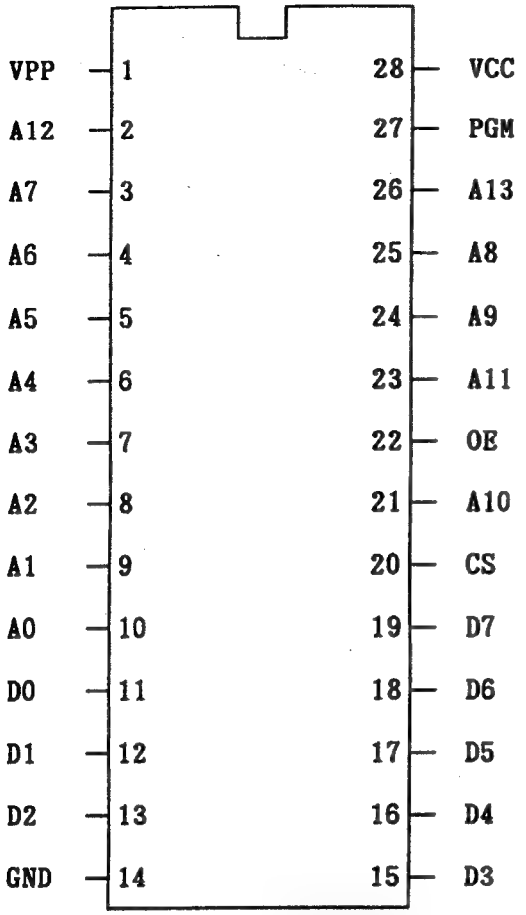


5. PART SPECIFICATION

8032 CPU

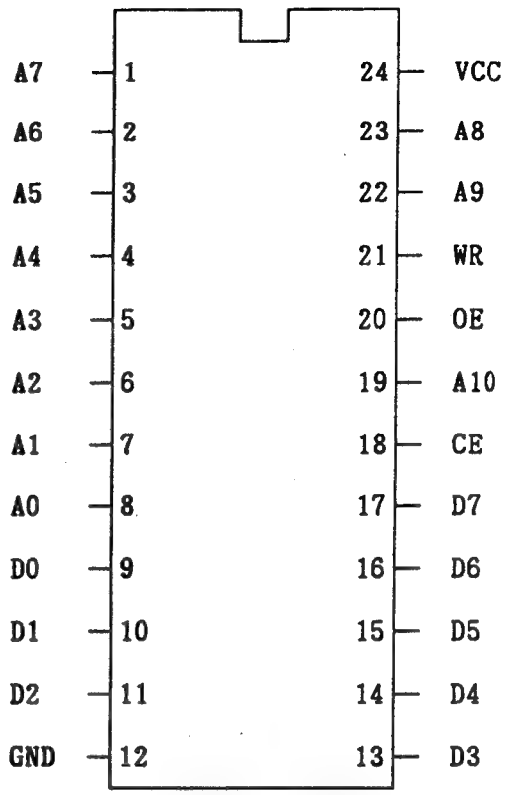
USER	PORT	PIN		PIN	PORT	USER
PRN MOTOR	P1.0	1		40	VCC	VCC
DRAWER	P1.1	2		39	P0.0	AD0
STAMP	P1.2	3		38	P0.1	AD1
SPOOL	P1.3	4		37	P0.2	AD2
TS1(PRINTER)	P1.4	5		36	P0.3	AD3
TS2(PRINTER)	P1.5	6		35	P0.4	AD4
TS3(PRINTER)	P1.6	7		34	P0.5	AD5
TS4(PRINTER)	P1.7	8		33	P0.6	AD6
RESET	RST	9		32	P0.7	AD7
DIGIT 1	P3.0	10		31	EA/VPP	GND
BUZZER	P3.1	11		30	ALE/PROG	ALE
RP(PRINTER)	P3.2	12		29	PSEN	PSEN
CP(PRINTER)	INT1	13		28	P2.7	A15
COMPULSORY	P3.4	14		27	P2.6	A14
BREAK(+18N)	P3.5	15		26	P2.5	A13
WRITE	WR	16		25	P2.4	A12
READ	RD	17		24	P2.3	A11
	XTAL1	18		23	P2.2	A10
	XTAL2	19		22	P2.1	A9
GND	VSS	20		21	P2.0	A8

EPROM 27128



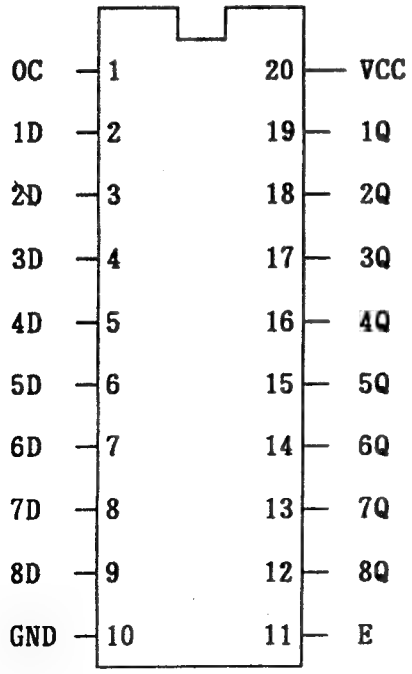
8 X 16KByte EPROM

RAM

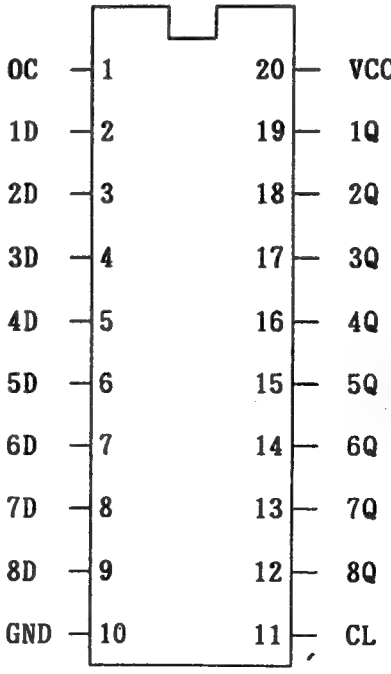


8 X 2KByte SRAM

LS573



LS574



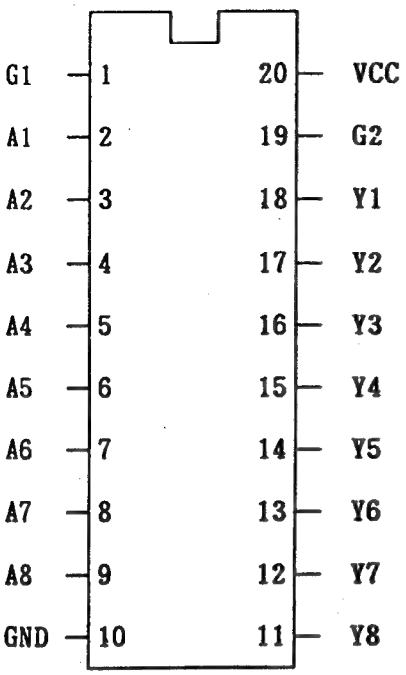
FUNCTION TABLE(LS573)

OC	E	D	Q
L	H	H	H
L	H	L	L
L	L	X	Q.
H	X	X	Z

FUNCTION TABLE(LS574)

OC	CLK	D	Q
L		H	H
L		L	L
L	L	X	Q.
H	X	X	Z

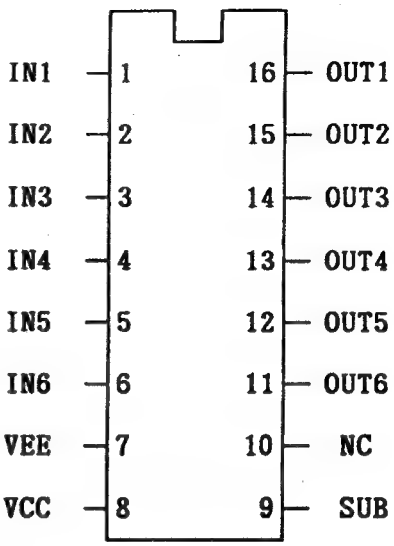
LS541



FUNCTION TABLE(LS541)

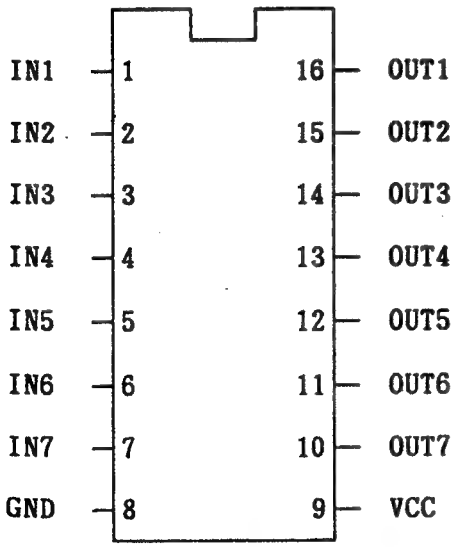
G1	G2	A	Y
L	L	L	L
L	L	H	H
H	X	X	Z
X	H	X	Z

IR2C05



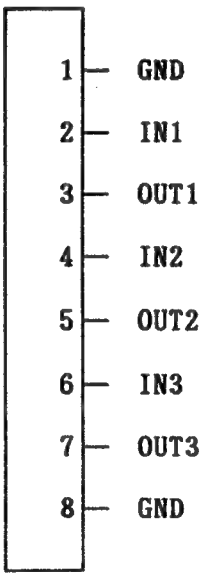
CURRENT DRIVER

ULN2003A



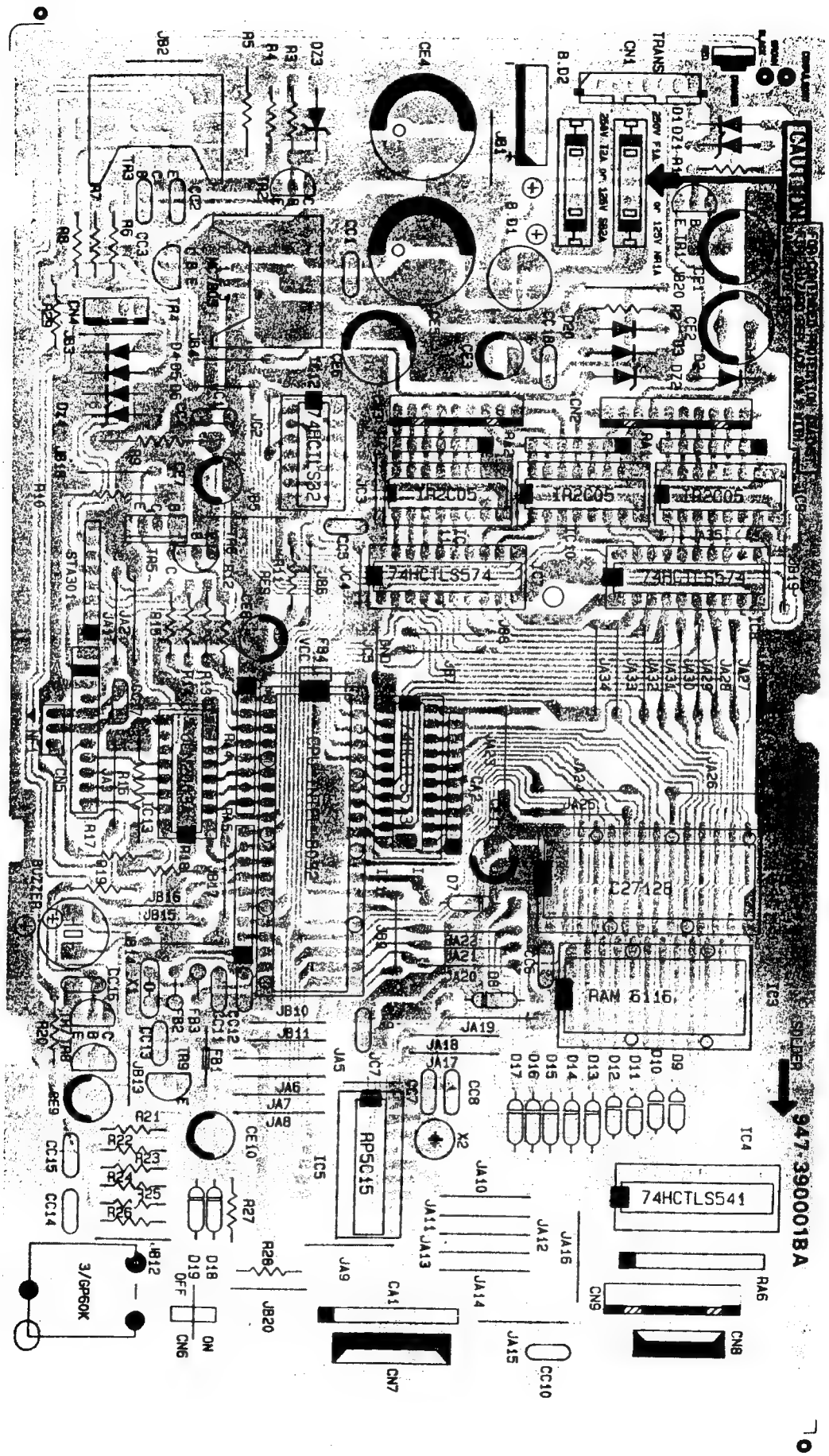
DARLINGTON TR-ARRAY

STA301



DARLINGTON TR-ARRAY

6 . MAIN PCB LAY OUT



P A R T L I S T

(E R - 2 2 0 N)

1. ASSY LOWER CASE

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
	813 390012AA	IMP,HOLDER CORD:SBHG1 T1.0	1	EA	
A-2	813 390013AA	IMP,BRACKET-CASING:SBHG1.6	2	EA	
	813 390018AC	IMP,BRACKET-FOOT:SCP1 T1.6	2	EA	
	821 390058BA	PLT,HOLDER-PRINTER:ABS V0	1	EA	
A-1	821 390123AC	PLT,CASE-LOWER:ABS V0 VH-	1	EA	
	841 214022BA	MACHINE,SCREW,PH+,M4X10:N	2	EA	CU+CL
	842 343022AB	TAPPING,PH+,2,M3,L10:PH,+	1	EA	HC+CL
	842 344022AB	TAPPING,PH+,2,M4,L10:PH,+	2	EA	CL+BC
	842 345027AB	TAPPING,PH+,2,M5,L14:PH,+	2	EA	DR+CL
	842 444013AB	TAPPING,RH+,2S,M4,L8:RH,+	2	EA	CL+B.F
	842 840007BG	TAPPING,PH+,W,2S,M3,L10:P	2	EA	CL+HP
	842 840009AA	TAPPING,PH+,W,2S,M3,L8:PH	1	EA	CL+HW
	855 133001BB	WASHER,TOOTHED ET,M3:M3,I	1	EA	

2. ASSY POWER SUPPLY

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
		(POWER-CORD)			
B-11	955 001380AAAA	CBF-POWER CORD,1600MM:LP-33 HOVV-F 0.75	1	EA	(EUROPE)
B-11	955 001382AAAA	CBF-POWER CORD,1600MM:KP-550 LTSA-3	1	EA	(AUSTRAIA)
B-11	955 001384AAAA	CBF-POWER CORD,1600MM:HS-3 SVT	1	EA	(USA)
B-11	955 001385AAAA	CBF-POWER CORD,1600MM:GTBS-3 HOVV-F	1	EA	(NON-PLUG)
B-11	955 001416AAAA	CBF-POWER CORD,1600MM:GB13A4 HOVV-F	1	EA	(U.K)
		(POWER-TRANS)			
B-2	923 390001AA	TRANS-POWER,220V/50HZ	1	EA	(EUROPE)
B-2	923 390001BA	TRANS-POWER,240V/50HZ	1	EA	(U.K)
B-2	923 390001CA	TRANS-POWER,120V/60HZ	1	EA	(USA)
B-2	923 390001DA	TRANS-POWER,110,220V/60HZ	1	EA	(KOREA)
B-4	842 344022AB	TAPPING,PH+,2,M4,L10:PH,+	1	EA	
B-3,5	855 124001BB	WASHER,SPRING,M4:M4,ID4.1	1	EA	
		(GROUND-PLATE)			
B-1	813 390049AA	IMP,PLATE-GROUND:SBHG1 T1.0	1	EA	
	842 443008AB	TAPPING,RH+,2,M3,L6:RH,+,	1	EA	
	847 501009DA	SPECIAL,TAPTITE,PH+,M4*6	1	EA	
	855 124001BB	WASHER,SPRING,M4:M4,ID4.1	1	EA	
	855 133001BB	WASHER,TOOTHED ET,M3:M3,I	1	EA	
	955 390043AAAA	CBF-TERMINAL LUG,90MM	1	EA	

3. ASSY HOLDER MOTOR

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
C-3	813 390044AA	IMP,HOLDER MOTOR:SBHG1 T1	1	EA	
C-2	821 390034AA	PLT,PULLY-WINDING A:ABS	1	EA	
C-1	821 390044AB	PLT,HOLDER-WINDING:ABS V0	1	EA	
C-7	821 397011AA	PLT,ROLLER-MOTOR:URETANE	1	EA	
C-8	841 312603BB	MACHINE,SCREW,PH+,M2.6:NO	2	EA	HM+M
	842 443022AB	TAPPING,RH+,2,M3,L10:RH,+	1	EA	HM+HW
	855 114002AB	WASHER,PLAIN,M4:M4,ID4.3,	2	EA	
C-9	855 122601BB	WASHER,SPRING,M2.6:M2.6,I	2	EA	HM+M
C-4	953 280032AA	MEP,MOTOR:	1	EA	

4. ASSY PRINTER

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
D-1	353 033104AAAA	DIGITAL PRINTER:CP-121CR	1	EA	
D-3	825 119334BA	INC,LABEL SERIAL	1	EA	
D-5	842 443013AB	TAPPING,RH+,2,M3,L8	4	EA	
D-4	842 840007BC	TAPPING,PH+,W,2S,M3,L6	1	EA	
D-6	855 134001BB	WASHER,TOOTHED,M4,ET	1	EA	PR+G
D-8	855 170065NC	WASHER,PLAIN	4	EA	
	937 120068AA	MAG-CORE,FERRITE,TOROIDA	1	EA	
	955 390004AZAA	CBF-TERMINAL RING,260MM	1	EA	

5. ASSY HOLDER STAMP

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	단위	REMARK
E		(ASSY STAMP)			
E-2	813 390030AA	IMP,ARM STAMP:SBC-1 T1.6	1	EA	
E-5	813 390042AA	IMP,HOLDER STAMP:SBC-1 T1.0	1	EA	
E-4	813 390060AA	IMP,SPRING PLATE:SUS 304	1	EA	
E-10	821 390047AA	PLT,CASE STAMP:ABS BLK	1	EA	
E-3	821 390048AA	PLT,CASE HOLDER:ABS BLK	1	EA	
E-6	821 397006AA	PLT,RUBBER STAMP:POROUS RUBBER"C"	1	EA	(ENGLISH)
E-6	821 397006AB	PLT,RUBBER STAMP:POROUS RUBBER"C"	1	EA	(SPANISH)
E-6	821 397006AD	PLT,RUBBER STAMP:POROUS RUBBER"C"	1	EA	(GERMAN)
E-7	831 521032AA	COM SPRING STAMP:SUS WH PI0.4	1	EA	
E-9	857 140070AE	MISCEL,SPRING PIN,D3,L12	1	EA	
E-8	857 150008AG	MISCEL,E-RING,#3	2	EA	
E-1	925 380008AA	COIL MAGNETIC SOLENOID:DC 17V	1	EA	
E-14	353 033124AAAA	(ASSY STAMP UNIT)	1	EA	
E-14	813 390114AA	IMP,BRIDGE STAMP:SBC1 T1.0	1	EA	
E-14	813 390115AA	IMP,BRACKET STAMP:SBC1 T1.0	1	EA	
E-15	821 390138AA	PLT,SHAFT PUSH:NYLON+GLASS FIBER 30%	1	EA	
E-11	841 213008BB	MACHINE SCREW,FH+,M3*6	2	EA	
E-12	841 810005AE	MACHINE SCREW,PH+,W	2	EA	
E-13	855 133001BB	WASHER,TOOTHED ET,M3	1	EA	

6. ASSY KEY BOARD

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	단위	REMARK
G	23553-701-710	(ASSY KEY BOARD:MEMBRANE)	1	EA	(ER-220)
G	23553-701-720	(ASSY KEY BOARD:MEMBRANE)	1	EA	(ER-240)
G	23553-701-760	(ASSY KEY BOARD:MEMBRANE)	1	EA	(ER-808)
G-1	23554-700-210	SWITCH-KEY TOP 1:ABS		EA	
G-1	23554-700-310	SWITCH-KEY TOP 2:ABS		EA	
G-1	23554-700-410	SWITCH-KEY TOP 3:ABS		EA	
G-1	23554-700-510	SWITCH-KEY TOP 4:ABS		EA	
G-1	23554-700-610	SWITCH-KEY TOP 6:ABS		EA	
G-1	23554-700-710	SWITCH-KEY TOP 7:ABS		EA	
G-1	23554-700-810	SWITCH-KEY TOP 8:ABS		EA	
G-1	23554-700-910	SWITCH-KEY TOP 9:ABS		EA	
G-1	23554-701-010	SWITCH-KEY TOP 00:ABS		EA	
G-1	23554-701-310	SWITCH-KEY TOP 5:ABS		EA	
G-2	23554-701-410	SWITCH-KEY TOP 0:ABS		EA	
G-3	23559-700-210	KEY-HOUSING:POM		EA	
G-11	26402-700-710	PLATE-MOUNT:SECC T1.2		EA	
	26403-700-410	(ASSY FPC)		EA	
	26402-702-010	FPC (A):PET T=125U	1	EA	
	26402-702-110	FPC (B):PET T=125U	1	EA	
	813 390097AA	IMP,BASE PLATE:SECC T1.0	1	EA	
	26403-701-510	SHIFT-PIN:SPCC SD		EA	
G-4	26674-710-610	COIL SPRING:SWPA RETURN 1*1U		EA	
G-12	26674-710-710	COIL SPRING:SWPA RETURN 1*2U		EA	
	26674-710-810	COIL SPRING:SUS CONTECT		EA	
	27148-530-060	SCREW-TP:M2.3*6		EA	
G-5	27623-701-310	KEY-TOP S		EA	
G-8	27623-701-410	KEY-TOP L		EA	
G-7	27624-702-110	KEY-CAP S		EA	
G-10	27624-702-210	KEY-CAP L		EA	
G-6,9	28131-701-910	LABEL KEY-TOP SET		EA	

7. ASSY UPPER

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	단위	REMARK
H-2	821 390108AB	PLT,WINDOW:PC (LEXAN 141-71016)	1	EA	
H-1	821 390136AC	PLT,CASE UPPER:ABS(VO)	1	EA	
	821 397004AA	PLT,PAD GROUND:NR ER-200	1	EA	
	825 119359BA	INC,LABEL BATTERY NEXT:AR	1	EA	
H-10	825 139375JA	INC,PLATE-MODE S/W:PVC T0.3	1	EA	(ER-220)
H-10	825 139375JB	INC,PLATE-MODE S/W:PVC T0.3	1	EA	(ER-240)
H-10	825 139375JD	INC,PLATE-MODE S/W:PVC T0.3	1	EA	(ER-808)
H-9	841 810005AE	MACHINE,SCREW,PH+,W	2	EA	
H-6	842 343013AB	TAPPING,PH+,2,M3,L8	2	EA	
	842 840007BG	TAPPING,PH+,W,2S,M3,L10	1	EA	
H-8	933 230034KA	SWITCH-KEY LOCK,KEY-A:OP	1	EA	
H-8	933 230034KB	SWITCH-KEY LOCK,KEY-B:VD	1	EA	
H-8	933 230034KC	SWITCH-KEY LOCK,KEY-C:P	1	EA	
	353 033154AAAA	ASSY KEY LOCK & R/J SWITCH	1	EA	
H-3	813 390048AA	IMP,BRACKET-RESET S/W	1	EA	
H-13	831 323001AG	COM,TUBE HISHI:D4*0.25 BLK	0.02	MT	
H-5	841 312603BB	MACHINE,SCREW,PH+,M2.6	2	EA	
H-7	933 230034AA	SWITCH ROTATRY,10	1	EA	
H-4	933 290070TA	SWITCH-SLIDE,TOP,DPDT	1	EA	
	955 390017AZAA	CBF-CONN ASSY,310MM,9P	1	EA	

8. ASSY DISPLAY

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
I-1	821 390017AA	PLT,HOLDER PWB DISPLAY:AB	1	EA	
I-3	821 397022AA	PLT,PAD-DIGITRON:RUBBER S	2	EA	
I-4	895 449005AA	DISPLAY-LCD,9DIGT	1	EA	
	935 240109KC	CON-BOX HEADER,9P,2.5MM	1	EA	
	935 240110KC	CON-BOX HEADER,10P,2.5MM	1	EA	
I-2	947 390001AA	PCB-DISPLAY,ER-220N,FR-1	1	EA	
	955 390001AAAA	CBF-CONN ASSY,310MM,9P	1	EA	
	955 390001AAAB	CBF-CONN ASSY,310MM,10P	1	EA	

9. ASSY TURRET DISPLAY

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
J-2	23024-705-510	PWB-TURRET DISPLAY:FR-1	1	EA	
J-1	821 390043AF	PLT,TURRET-BODY:ABS VO VH	1	EA	
J-6	821 390132AD	PLT,WINDOW-TURRET:PC(LEXA	2	EA	
J-3	821 397022AB	PLT,PAD-DIGITRON:RUBBER S	2	EA	
J-5	827 159038AA	PAC,PAD TURRET PCB:RUBBER	1	EA	
J-4	895 449005AA	DISPLAY-LCD,9DIGT	1	EA	
	955 390012AZAA	CBF-CONN ASSY,310MM,9P	1	EA	
	955 390017AZAA	CBF-CONN ASSY,310MM,10P	1	EA	

10. ASSY-COVER PRINTER

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
K-2	821 390020AA	PLT,WINDOW C/P:ACRYL	1	EA	
K-1	821 390122AB	PLT,COVER-PRINTER:ABS V0	1	EA	
K-3	825 139173MA	INC,BRAND PANEL:PVC T0.3	1	EA	

11. DRAWER

A. ASSY-BILL COIN

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
	2D902-701-077	ASSY-BILL COIN	1	EA	(A5C4B)
	2D902-701-076	ASSY-BILL COIN	1	EA	(A5C5B)
	2D902-701-079	ASSY-BILL COIN	1	EA	(A8C4B)
	821 390002AA	PLT,LEVER PRESS:ACETAL,BL	4,5	EA	
	831 521006AA	COM,SPRING-LEVER PRESS:SU	4,5	EA	
	813 390014AA	IMP,HOLDER-LEVER PRESS:SUS-WH	1	EA	
	841 613008BB	MXCHINE,SCREW,BH+,M3X6:NO	3	EA	
	842 343008AB	TAPPING,PH+,2,M3,L6:PH,+,	1	EA	
	813 390002AA	IMP,HOLDER LEVER PRESS:ACETAL,BL	4,5	EA	
	821 390005AA	PLT,PARTETION-BILL:STAREX	4	EA	
	821 390003AA	PLT,BILL COIN-TILL:STAREX	1	EA	(5C5B,5C4B)
	821 390049AA	PLT,BILL COIN-TILL:ABS(BLK)	1	EA	(5C5B,5C4B)

B. ASSY-TRAY

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
	2D902-701-052	ASSY-TRAY	1	EA	
	831 561002AB	LOCK,WEY ASSY	1	EA	(LOCK KEY:NO)
	813 390036AB	IMP,PANEL-FRONT:SBC1 T1.0	1	EA	(LOCK KEY:YES)
	2D903-701-076	ASSY SUB TRAY	1	EA	(ERD-A5502,A8402)
	813 390025AA	IMP,SUPPORT-TRAY BRACKET:	1	EA	
D-6	813 390034AA	IMP,TRAY-TILL:SBHG-1 T1.2	1	EA	
	813 390053AA	IMP,BRACKET-SHAFT LOCK:SB	1	EA	
	813 390055AA	IMP,SUPPORT-TRAY:SBHG-1 T	1	EA	
	813 390056AA	IMP,SUPPORT-PANEL LH:SBHG	1	EA	
	813 390057AA	IMP,SUPPORT-PANEL RH:SBHG	1	EA	
D-10	853 126001BB	NUT,HEX,2-M6:HEX,2,M6,-,Z	1	EA	
	821 390062AA	PLT,SPONGE-TENSION:SPONGE	2	EA	
	813 390096AA	IMP,ROLLER:DR-19-B1 PI19	2	EA	
D-11	27308-203-001	PLAIN WASHER	2	EA	
	813 390025AA	IMP,SUPPORT-TRAY BRACKET:	1	EA	
	841 514013BB	MACHINE SCREW,TH+,M4*8	2	EA	
D-9	813 395000AA	IMP,SHAFT-LOCK:S45C PI5.0	1	EA	
	841 213008BC	MACHINE,SCREW,FH+,M3X6:NO	1	EA	
D-12	857 150008AG	MISCEL,E RING,#3:ID3,OD7,	1	EA	

C. ASSY-HOUSING

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
A-2	2D903-701-051	ASSY-SUB HOUSING	1	EA	
	813 390007AA	IMP,HOUSING:SBC-1 T1.0 DR	1	EA	
	813 390031AA	IMP,CHANNEL-LH:SBC-1 T1.6	1	EA	
	813 390032AA	IMP,CHANNEL-RH:SBC-1 T1.6	1	EA	
	813 390037AA	IMP,FRONT-PLATE:SBC-1 T1.	1	EA	
	813 390038AA	IMP,REAR-PLATE:SBC-1 T1.0	1	EA	
	813 390058AA	IMP,SUPPORT-CHANEL:SBC-1	1	EA	
A-1	813 390096AA	IMP,ROLLER:DR-19-B1 PI19	1	EA	

D.ASSY-LOCK

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
C	2D903-701-005	ASSY-LOCK	1	EA	(U.S.A)
C	2D903-701-004	ASSY-LOCK	1	EA	(EUROPE)
	841 314029BB	MACHINE,SCREW,PH+,M3X16:NO	1	EA	
	831 313007AA	COM,RUBBER BUMPER:NR BL(E	0	EA	
C-4	831 522004AA	COM,SPRING-PUSH:FZN BLK	1	EA	
C-3	831 521005AA	COM,SPRING-LOCK LEVER:SIL	1	EA	
	811 390003AA	SUA,BRACKET-LOCK ASS'Y:SB	1	EA	
	813 390029AA	IMP,LEVER-LOCK:SCP1 T2.3	1	EA	
	857 110034AA	MISCEL,RIVET,SPECIAL:D4,L	1	EA	
	937 330003AA	MAG-SOLENOID ASSY:ERD 550C	1	EA	(U.S.A)
C-1	24793-700-101	DC-SOLENOLD ASSY:KSD-2013	1	EA	(EUROPE)
	935 810916AA	CON-TERMINAL,PLUG,PIN	3	EA	
	813 390017AA	IMP,BRACKET M/SW:SBHG T1.0	0	EA	
C-6	841 413008BB	MACHINE,SCREW,RH+,M3X6:NO	1	EA	
	933 250034AA	SWITCH-MICRO,SIM LEVER	1	EA	
C-7	841 514028BA	MACHINE,SCREW,TH+,M4X15:N	2	EA	
	853 123001BB	NUT,HEX 2-M3:HEX,2,M3,-,ZPC3,SM20C	2	EA	
	841 514013BB	MACHINE,SCREW,TH+,M4*8	3	EA	
	821 397005AA	PLT,RUBBER-STOPPER:NR BL(	1	EA	
	813 390035AA	IMP,BOTTOM-PLATE:SBHG-1 T	1	EA	
	821 391001AA	PLT,LEVER ASSY:DRAWER	0	EA	

E.ASSY-BOTTOM

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
B-1	813 390035AA	IMP,BOTTOM-PLATE:SBHG-1 T	1	EA	
	821 397005AA	PLT,RUBBER-STOPPER:NR BL(	2	EA	
	831 313006AA	COM,RUBBER FOOT	4	EA	
	841 514028BA	MACHINE,SCREW,TH+,M4X15:N	4	EA	

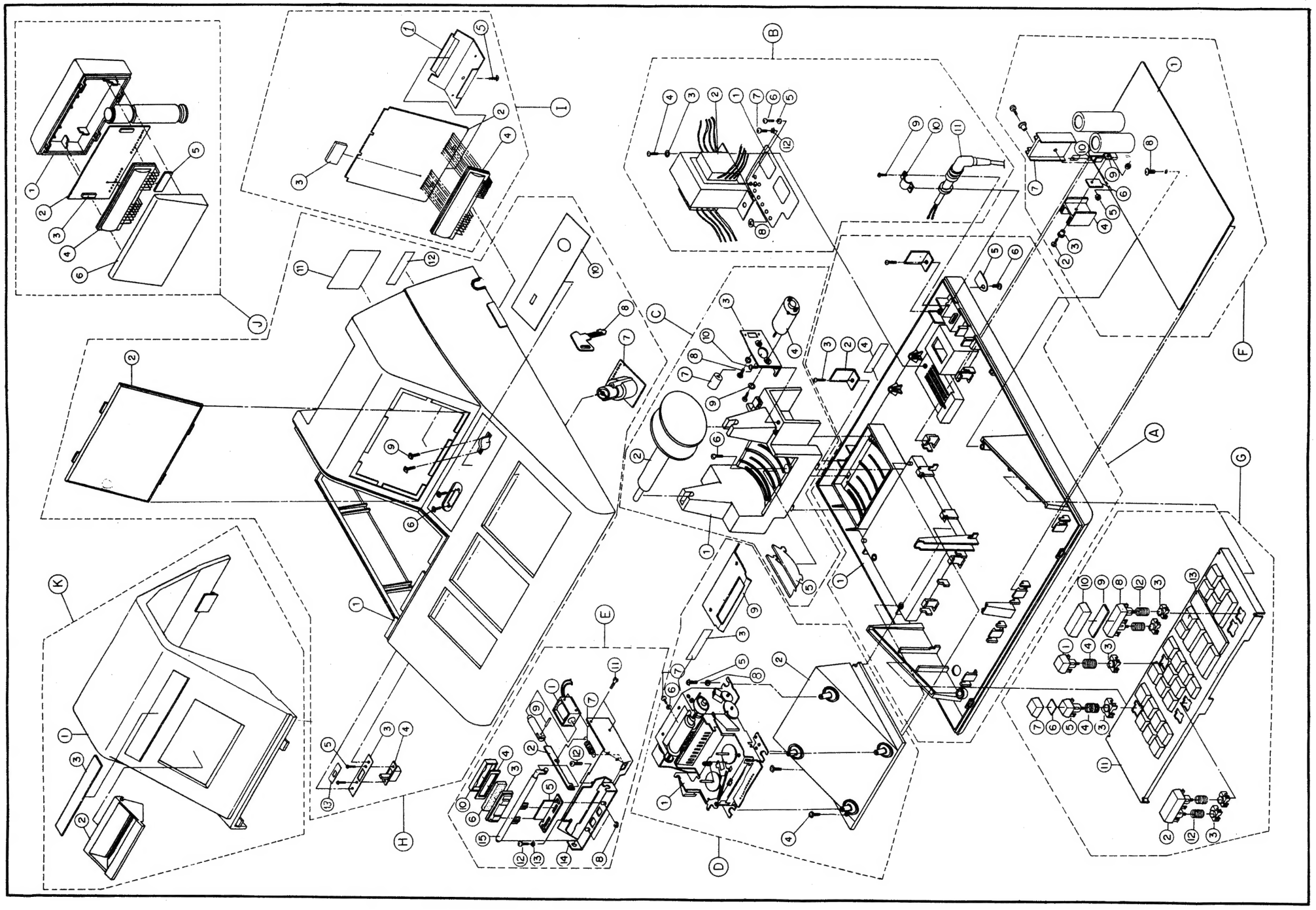
12. ASSY-MAIN PCB

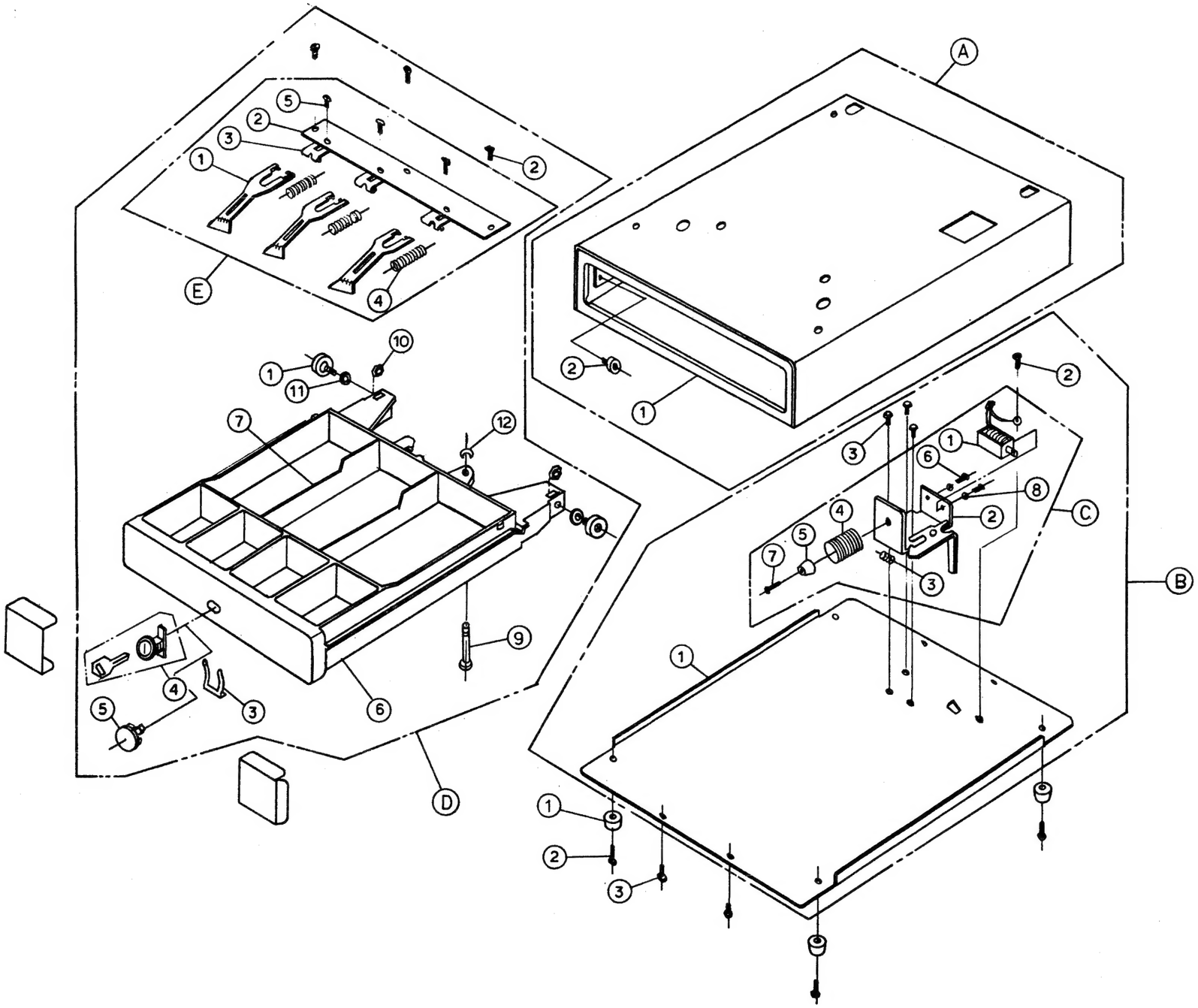
A. ASSY-MAIN AUTO

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
	353 033064AAAA	ASSY MAIN AUTO:ER-220			
	02169-201-077	DIODE:1N4003(T)	7	EA	D1,2,3,4,5,6,20
	873 790032AANB	IC-MOS,74HCT32,GATE	1	EA	IC12
	873 790541AC	IC-MOS,74HCT541,BUFFER:DI	1	EA	IC4
	873 790573AC	IC-MOS,74HCT573,LATCH:DIP	1	EA	IC6
	873 790574AC	IC-MOS,74HCT574,LATCH:DIP	2	EA	IC7,8
	881 700515AA	IC-LIN,5C15,TIME CLOCK:DI	1	EA	IC5
	881 800205AA	IC-LIN,2005,TR ARRAY:DIP,	3	EA	IC9,10,11
	881 802003AAND	IC-LIN,2657	1	EA	IC13
	887 135472SGSA	IC-HYB,R-NETWORK,9P:SIP,9	3	EA	RA4,5,6
	891 190733XC	TR-PNP,KSC733,TO-92	1	EA	TR1
	891 390006XA	TR-NPN,KSC945,TO-92:0.25W	6	EA	TR2,4,6,7,8,9
	891 490288BCNA	(S)TR-NPN,KSD288-Y,TO-92	1	EA	TR,5
	893 114148AANA	DIODE-SIG,1N4148,DO-35:75	13	EA	D7-19
	911 131007DA	REF-CF,100,5%,1/4W:250V,-	1	EA	R27
	911 131507DA	REF-CF,150,5%,1/4W:250V,-	3	EA	R18,21,29
	911 132207DA	REF-CF,220,5%,1/4W:250V,-	1	EA	R17
	911 134707DA	REF-CF,470,5%,1/4W:250V,-	1	EA	R20
	911 135607DA	REF-CF,560,5%,1/4W:250V,-	1	EA	R2
	911 136807DA	REF-CF,680,5%,1/4W:250V,-	2	EA	R1,3
	911 141007DA	REF-CF,1K,5%,1/4W:250V,-3	1	EA	R23
	911 142207DA	REF-CF,2.2K,5%,1/4W:250V,	4	EA	R13,14,15,19
	911 144707DA	REF-CF,4.7K,5%,1/4W:250V,	9	EA	R6,7,11,12,22-28
	911 151007DA	REF-CF,10K,5%,1/4W:250V,-	1	EA	R8
	911 161007DA	REF-CF,100K,5%,1/4W:250V,	1	EA	R4
	915 312300HJHH	CAP-CERAMIC,300J,1H,SL:30	4	EA	CC7,8,11,12
	915 325100HKPH	CAP-CERAMIC,103K,1H,Y5P:1	2	EA	CC14,15
	915 336100HZVH	CAP-CERAMIC,104Z,1H,Y5V:1	12	EA	CC1-6,9,10,13,16,17,18
	917 121470HM	CAP-AL.ELEC,475M,1H:(T)50	1	EA	CE8
	917 122470CM	CAP-AL.ELEC,476M,1C:(T)50	1	EA	CE3
	917 123100CM	CAP-AL.ELEC,107M,1C:(T)16	3	EA	CE7,10,11
	935 240104KCSA	CON-BOX HEADER,4P,2.5MM	1	EA	CN4
	937 120204BA	MAG-CORE,FERRITE,BEAD	3	EA	FB1,4
	937 120208AA	MAG-CORE,FERRITE,BEAD	3	EA	FB2,3
	947 390001BA	PCB-MAIN,ER-220N,FR-1	1	EA	
	955 005001AAAB	CBF-JUMPER WIRE,52MM:TAPP	61	EA	

B.MAIN PCB

NO	CODE NO.	DESCRIPTION / SPECIFICATION	Q'TY	UNIT	REMARK
	24719-006-010	BATTERY-NICAD	1	EA	
	(353 033154AABB)	(ASSY HEAT SINK:45+D288)	1	EA	TR 288
	831 511011AB	COM,HEAT SINK:A6063 H45	1	EA	
	842 840009AA	TAPPING,PH+,W,2S,M3,L8:PH	1	EA	
	891 490288BCNA	(S)TR-NPN,KSD288-Y,TO-92	1	EA	
	(353 033154AABD)	(ASSY HEAT SINK:45 + 7805)	1	EA	7805
	831 511011AA	COM,HEAT SINK:A6063 H45	1	EA	
	842 840009AA	TAPPING,PH+,W,2S,M3,L8:PH	1	EA	
	881 307805KANE	IC-LIN,7805,REGULATOR:TO-	1	EA	
	825 119334BA	INC,LABEL SERIAL	1	EA	
	825 119491AA	INC,ROM PROTECTOR	1	EA	
	842 443013AB	TAPPING,RH+,2,M3,L8	1	EA	PWB+CL
	853 123001BB	NUT,HEX,2-M3	2	EA	TR+HS
	877 108032AA	IC-MPU,8032,PROCESSOR:DIP	1	EA	IC1
	881 800301UA	IC-LIN,301,TR ARRAY:SIP,8	1	EA	
	883 106116AANB	IC-MEM,SRAM,6116,2K*8	1	EA	IC3
	883 627256BA	IC-MEM,EPROM,27C256,256K:	1	EA	IC2
	887 135104SE	IC-HYB,R-NETWORK,7P	3	EA	RA1,2,3
	887 200012SA	IC-HYB,C-NETWORK,9P	1	EA	CA2
	893 290019CA	DIODE-ZEN,DZ-18B,DO-35	1	EA	DZ3
	893 290031FB	DIODE-ZEN,UZ-5.1B	1	EA	DZ2
	893 290032AC	DIODE-ZEN,UZP-24B,DO-41:	1	EA	DZ1
	893 290032AF	DIODE-ZEN,UZP-6.2B,DO-41:	1	EA	DZ4
	893 390108AANA	DIODE-REC,W02G,:200V,1A,1	1	EA	B.D1
	893 399062AA	DIODE-REC,FM202,-:200V,-,	1	EA	B.D2
	911 151007DA	REF-CF,10K,5%,1/4W:250V,-	1	EA	SOLDER AREA
	911 328207JA	REF-MO,82,5%,2W(S):500V,	1	EA	R16
	911 331507JF	REF-MO,150,5%,2W(S):500V,	1	EA	R9
	911 337507GB	REF-MO,750,5%,2W(S):500V,	1	EA	R10
	911 441007GA	REF-MF,1K,5%,1W	1	EA	R5
	917 123100LM	CAP-AL.ELEC,107M,2A:(T)10	1	EA	CE1
	917 124220FM	CAP-AL.ELEC,228M,1V	1	EA	CE5
	917 843470CM	CAP-AL,ELEC,477M,1C:470UF	2	EA	CE2,6
	917 844220HM	CAP-AL,ELEC,228M,1H,18X	1	EA	CE4
	935 144106AANB	CON-FLAT CABLE,6P,2.54:ST	1	EA	CN8
	935 144108AANA	CON-FLAT CABLE,8P,2.54:ST	1	EA	CN7
	935 155128DC	CON-IC SOCKET,28P:DIP,STR	1	EA	
	935 220110TF	CON-NOWALL HEADER,10P	1	EA	CN5
	935 240108DA	CON-BOX HEADER,8P,2.5MM:1	1	EA	CN1
	935 240109DA	CON-BOX HEADER,9P,2.5MM:1	2	EA	CN3,9
	935 240110DA	CON-BOX HEADER,10P,2.5MM:1	1	EA	CN2
	939 010031AA	AUDIO-BUZZER:-,-,-,-,	1	EA	
	941 110067UBNA	CRYSTAL,12M,50:HC-18/U,-,	1	EA	
	941 110073AA	CRYSTAL,32.768K,20:DT-38,	1	EA	
	949 115003FHNB	FUSE-GLASS TUBE,1,250:QUI	1	EA	1A(EUROPE)
	949 115009THNB	FUSE-GLASS TUBE,2A,250V:T	1	EA	2A(EUROPE)
	949 115101NLNA	FUSE-GLASS TUBE,1,125:QUI	1	EA	1A(U.S.A)
	949 115101SLNA	FUSE-GLASS TUBE,2A,125V:T	1	EA	2A(U.S.A)
	953 260017BA	FUSE CLIP,5*20	4	EA	
	955 390003AZAA	CBF-CONN ASSY,100MM,3P	1	EA	(DRAWER CONN EUROPE)
	955 390046AAAA	CBF-CONN ASSY,100MM,3P	1	EA	(DRAWER CONN USA)
	955 390003AZAB	CBF-CONN ASSY,100MM	1	EA	(COMPULSORY)

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